

AP9982

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Zeibig et al

German Appln No.: 10062431.6

Priority Filing Date: 18/Dec/2000

Serial No.:

Group Art Unit:

Filed: Herewith

Examiner:

For: Hydraulic Piston and Process for its Surface Treatment

Attorney Docket No.: AP9982

Paper No.

Commissioner of Patents  
Washington, D.C. 20231

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

☒ deposited with the United States Postal Service  
with sufficient postage as Express Mail, Post Office  
to Addressee, Mailing Label No.: EVO51008017.US  
addressed to, Commissioner of Patents  
Washington, DC 20231

☐ transmitted by facsimile to the Patent and Trademark Office.  
to Examiner \_\_\_\_\_ at \_\_\_\_\_

Signature

Joyce Krumpke

Date: 12/18/01

Joyce Krumpke

**PRELIMINARY AMENDMENT**

Dear Sir:

Please amend the application as follows prior to examination on the merits.

**IN THE CLAIMS**

Please cancel claims 1-7 and add the following new claims.

AP9982

8. (New) Hydraulic piston, in particular brake piston for an automotive vehicle brake, with a thermochemically treated surface, with several superposed layers at the piston surface, comprising:

a layer of oxide that is arranged directly at the piston surface and has a thickness of at least  $1\mu\text{m}$ ,

a connecting layer which is arranged beneath the layer of oxide and is mainly composed of nitrides,

a diffusion layer that is arranged beneath the connecting layer and includes nitrogen in a dissolved condition or separated nitrides, wherein the connecting layer has a minimum thickness of  $8\mu\text{m}$ .

9. (New) Hydraulic piston as claimed in claim 8, wherein the connecting layer includes capillary tubes which are respectively closed at the piston surface by portions of the layer of oxide.

10. (New) Process for surface treatment of a hydraulic piston, in particular a brake piston, comprising the following procedure:

a nitrocarburization of the piston in a gaseous medium;

a postoxidation of the piston in a medium yielding oxygen  $\text{O}_2$ ;

a machining of the oxidized surface for adjusting the surface quality.

11. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein the nitrocarburization of the piston is carried out in several stages:

AP9982

a first stage wherein the piston is exposed to a first gaseous medium comprised of ammonia  $\text{NH}_3$ , carbon dioxide  $\text{CO}_2$ , and nitrogen,

a second stage of nitrocarburization wherein the piston is exposed to a second gaseous medium comprised of ammonia  $\text{NH}_3$  and carbon dioxide  $\text{CO}_2$ .

12. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein the temperature during the nitrocarburization process amounts to maximally  $530^\circ\text{C}$ .

13. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein an ambient medium separated from ammonia  $\text{NH}_3$  is provided for the piston before the postoxidation.

14. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein said machining is effected by a polishing or brushing operation.

#### **REMARKS**

Prior to a formal examination of the above-identified application, acceptance of the new claims and the enclosed substitute specification (under 37 CFR 1.125) is respectfully requested. It is believed that the substitute specification and new claims will facilitate processing of the application in accordance with M.P.E.P. 608.01(q). The substitute specification and new claims are in compliance with 37 CFR 1.52 (a and b) and, while making no substantive changes, are submitted to conform this case to the formal requirements and long-established formal standards of U.S. Patent Office practice, and to provide improved idiom and better grammatical form.

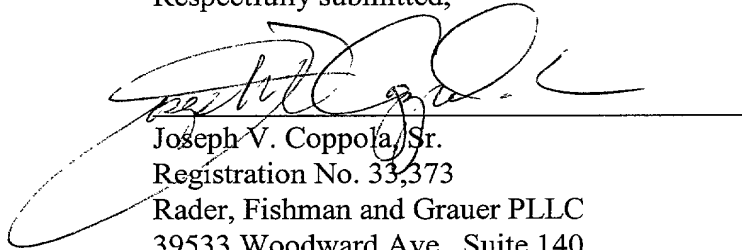
The enclosed substitute specification is presented herein in both marked-up and clean versions.

AP9982

**STATEMENT**

The undersigned, an attorney registered to practice before the office, hereby states that the enclosed substitute specification includes the same changes as are indicated in the mark-up copy of the original specification. The substitute specification contains no new subject matter.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joe Coppola", is written over a horizontal line.

Joseph V. Coppola, Sr.

Registration No. 33,373

Rader, Fishman and Grauer PLLC

39533 Woodward Ave., Suite 140

Bloomfield Hills, Michigan 48304

(248) 594-0650

Attorney for Applicants

CUSTOMER NO. 010291